WHAT IS CLAIMED IS:

1. A communication apparatus which is connected to a communication network and, via said communication network, communicates packets including sequence numbers and data to be transmitted, said packet transfer communication apparatus comprising:

reception means for receiving packets from said communication network;

extraction means for extracting the sequence numbers and the data to be transmitted from the packets received by said reception means, in such a manner that the sequence numbers are consecutive or discontinuous;

storage means for storing the sequence number of the packet until the packet whose sequence number lies between said discontinuous sequence numbers have been received, or during a specific period of time; and

rearrangement means for rearranging the received data including the data in the newly received packet and the data in the previously received packets on the basis of the sequence number of the new packet extracted by said extraction means and the sequence numbers stored in said storage means.

2. The packet transfer communication apparatus according to claim 1, wherein said storage means stores the missing sequence number between said discontinuous sequence numbers.

3. The packet transfer communication apparatus

according to claim 1, wherein

said rearrangement means includes

means for comparing the sequence number extracted
by said extraction means with the sequence numbers
stored in said storage means and thereby judging
whether the order in which the packets were received is
correct or not,

means for, if the result of the comparison showed
that the order in which the packets were received is
incorrect, forming a list of the sequence numbers of
the packets likely to be received in future, and

means for, when said reception means has received
a new packet within a specific period of time,
inserting new data having a sequence number in said
list into a suitable position so that the new data may
be arranged in the stream of the received data in the
order of sequence numbers.

4.   The packet transfer communication apparatus
according to claim 3, further comprising means for
deleting the corresponding sequence number from said
list after said specific period of time has elapsed.

5.   A packet transfer communication method in
a packet transfer communication apparatus which is
connected to a communication network and, via said
communication network, communicates packets including
sequence numbers and data to be transmitted, said
packet transfer communication method comprising:

the step of receiving packets from said communication network;

the step of extracting the sequence numbers and the data to be transmitted from the packets received in the receiving step, in such a manner that the sequence numbers are consecutive or discontinuous;

the step of storing the sequence number of the packet until the packet whose sequence number lies between said discontinuous sequence numbers have been received, or during a specific period of time; and

a rearrangement step of rearranging the received data including the data in the newly received packet and the data in the previously received packets on the basis of the sequence number of the new packet extracted in said extracting step and the sequence number stored in said storing step.

6. The packet transfer communication method according to claim 5, wherein said storing step stores the missing sequence number between said discontinuous sequence numbers.

7. The packet transfer communication method according to claim 5, wherein

said rearrangement step includes

the step of comparing the sequence number extracted in said extracting step with the sequence numbers stored in said storing step and thereby judging whether the order in which the packets were received is

correct or not,

the step of, if the result of the comparison showed that the order in which the packets were received is incorrect, forming a list of the sequence

5   numbers of the packets likely to be received in future, and

the step of, when said receiving step has received a new packet within a specific period of time, inserting new data having a sequence number in said

10   list into a suitable position so that the new data may be arranged in the stream of the received data in the order of sequence numbers.

8. The packet transfer communication method according to claim 7, further comprising the step of

15   deleting the corresponding sequence number from said list after said specific period of time has elapsed.

9. A storage medium which stores a program for operating a packet transfer communication apparatus or a computer connected to a communication network, said

20   storage medium

causing said packet transfer communication apparatus or computer to receive packets from said communication network,

causing the data to be transmitted and the

25   sequence numbers given to the packets in packet transmission to be extracted consecutively or discontinuously from the received packet,

causing the sequence number of the packet until
the packet whose sequence number lies between said
discontinuous sequence numbers have been received or
during a specific period of time, and

5   storing a program for rearranging the received
data including the data in the newly received packet
and the data in the previously received packets on the
basis of the sequence number of the newly extracted
packet and the stored sequence numbers, in such a
10   manner that said packet transfer communication
apparatus or computer can read the program.

10.   The storage medium according to claim 9,
wherein said program causes the missing sequence number
between said discontinuous sequence numbers to be
15   stored.

11.   The storage medium according to claim 9,
wherein

said rearrangement program

compares said extracted sequence number with the
20   sequence numbers stored in said storing step and
thereby judges whether the order in which the packets
were received is correct or not, and

if the result of the comparison showed that the
order in which the packets were received is incorrect,
25   causes a list of the sequence numbers of the packets
likely to be received in future to be formed, and

when a new packet has been received within

a specific period of time, inserts new data having
a sequence number in said list into a suitable position
so that the new data may be arranged in the stream of
the received data in the order of sequence numbers.

5   12. The storage medium according to claim 11,
wherein said program causes the corresponding sequence
number to be deleted from said list after said specific
period of time has elapsed.